AMENDMENTS TO THE CLAIMS

1. (Original) A method of preparing cellulose ethers comprising the steps of:

(a) obtaining mercerized and recovered cellulose pulp; and

(b) converting the mercerized and recovered cellulose pulp into the cellulose ethers,

wherein the mercerized cellulose pulp in step (a) was mercerized with a cellulose II mercerizing agent, and when the cellulose ether prepared is hydroxyethyl cellulose and the cellulose pulp is southern softwood kraft, the mercerized and recovered cellulose pulp has at least one of the following properties:

(i) a TAPPI 230 om-89 viscosity less than 10.4 cP or greater than 11.2 cP,

(ii) a solubility in 10% sodium hydroxide as determined by ASTM D 1696-95 of greater than 2.3%,

(iii) a solubility in 18% sodium hydroxide as determined by ASTM D 1696-95 of greater than 1.3%,

(iv) not been prehydrolyzed, or

(v) not been bleached with elemental chlorine.

2. (Original) The method of claim 1, wherein the cellulose pulp is selected from the group consisting of cotton linters pulps, hardwood cellulose pulps, softwood cellulose pulps, sulfite cellulose pulps, kraft cellulose pulps, rehydrated cellulose pulps, and any combination of any of the foregoing.

3. (Original) The method of claim 2, wherein the hardwood cellulose pulp is selected from the group consisting of southern hemisphere hardwood kraft cellulose pulps, southern hemisphere hardwood sulfite cellulose pulps, Scandavian hardwood kraft cellulose pulps, Scandavian hardwood sulfite cellulose pulps, northern hardwood kraft cellulose pulps (NHK), northern hardwood sulfite cellulose pulps, southern hardwood kraft cellulose pulps (SHK), southern hardwood sulfite cellulose

pulps, tropical hardwood kraft cellulose pulps, tropical hardwood sulfite cellulose pulps, and any combination of any of the foregoing.

4. (Original) The method of claim 2, wherein the softwood cellulose pulp is selected from the group consisting of southern hemisphere softwood kraft cellulose pulps, southern hemisphere softwood sulfite cellulose pulps, Scandavian softwood kraft cellulose pulps, Scandavian softwood sulfite cellulose pulps, southern softwood kraft cellulose pulps (SSK), northern softwood kraft cellulose pulps (NSK), southern softwood sulfite cellulose pulps (SSS), northern softwood sulfite cellulose pulps (NSS), and any combination of any of the foregoing.

5. (Original) The method of claim 2, wherein the sulfite cellulose pulp is selected from the group consisting of southern softwood sulfite cellulose pulps, northern softwood sulfite cellulose pulps, tropical hardwood sulfite cellulose pulps, and any combination of any of the foregoing.

6. (Original) The method of claim 1, wherein the cellulose pulp is cotton linters pulp.

7. (Original) The method of claim 1, wherein the cellulose pulp is a softwood sulfite cellulose pulp.

8. (Original) The method of claim 1, wherein the cellulose pulp is a never dried cellulose pulp.

9. (Original) The method of claim 1, wherein the cellulose pulp is not regenerated cellulose pulp.

10. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp is a cellulose floc.

11. (Original) The method of claim 1, wherein step (a) comprises:

(i) mercerizing cellulose pulp; and

(ii) washing, neutralizing, or neutralizing and washing the mercerized

cellulose pulp.

12. (Original) The method of claim 11, wherein the cellulose pulp in step (a)(i) is mercerized with an aqueous solution containing from about 9 to about 24% by weight of sodium hydroxide, based upon 100% weight of total aqueous solution.

13. (Original) The method of claim 12, wherein the cellulose pulp in step (a)(i) is mercerized with an aqueous solution containing from about 13 to about 24% by weight of sodium hydroxide, based upon 100% weight of total aqueous solution.

14. (Original) The method of claim 1, wherein step (a) comprises:

(i) mercerizing cellulose pulp; and
(ii) washing the mercerized cellulose pulp.

15. (Original) The method of claim 14, wherein the mercerized cellulose pulp in step (a)(ii) is washed with an aqueous solution.

16. (Original) The method of claim 15, wherein the washing step is continued until the residual water has a pH of less than about 10.

17. (Original) The method of claim 15, wherein step (a) further comprises (iii) drying the mercerized and washed, neutralized, or washed and neutralized cellulose pulp.

18. (Original) The method of claim 17, wherein the mercerized and dried cellulose pulp contains less than about 20% by weight of moisture content, based upon 100% weight of total cellulose pulp and water.

19. (Original) The method of claim 11, wherein step (a) comprises:

(i) treating cellulose pulp to form a cellulose floc;

(ii) mercerizing the cellulose floc; and

(iii) washing, neutralizing, or neutralizing and washing the mercerized cellulose floc.

20. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp is substantially free of cellulose III.

21. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp contains less than about 3.5% by weight of mercerizing agent, based upon 100% by weight of cellulose pulp and mercerizing agent

22. (Original) The method of claim 21, wherein the mercerized and recovered cellulose pulp contains less than about 0.3% by weight of mercerizing agent, based upon 100% total weight of cellulose pulp and mercerizing agent.

23. (Original) The method of claim 22, wherein the mercerized and recovered cellulose pulp contains less than about 0.03% by weight of mercerizing agent, based upon 100% total weight of cellulose pulp and mercerizing agent.

24. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp has an Rx value of greater than 0.57.

25. (Original) The method of claim 24, wherein the mercerized and recovered cellulose pulp has an Rx value of greater than 0.60.

26. (Original) The method of claim 25, wherein the mercerized and recovered cellulose pulp has an Rx value of greater than 0.64.

27. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp has at least about 20% by weight of cellulose II, based upon 100% total weight of the crystalline portion of the mercerized cellulose pulp.

28. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp has a total crystallinity of less than about 60% by weight, based on 100% weight of total cellulose pulp.

29. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp has a TAPPI 230 om-89 viscosity of less than 10.4 cP or greater than 11.2 cP.

30. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp has a TAPPI 230 om-89 viscosity greater than 12 cP.

31. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp has a solubility in 10% sodium hydroxide as determined by ASTM D 1696-95 of greater than 2.3%.

32. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp has a solubility in 18% sodium hydroxide as determined by ASTM D 1696-95 of greater than 1.3%.

33. (Original) The method of claim 1, wherein the mercerized and recovered cellulose pulp has an alpha cellulose content less than 97% as determined by TAPPI Method T203 or ASTM D 588-42.

34. (Original) The method of claim 33, wherein the mercerized and recovered cellulose pulp has an alpha cellulose content less than 90% as determined by TAPPI Method T203 or ASTM D 588-42.

35. (Original) The method of claim 1, wherein step (b) comprises converting the mercerized cellulose pulp into the cellulose ethers via a cellulose floc intermediate.

36. (Original) The method of claim 35, wherein step (b) comprises:

(i) treating the mercerized and recovered cellulose pulp to form a cellulose floc;
(ii) alkalating the cellulose floc to form an alkali cellulose; and
(iii) etherifying the alkali cellulose to form the cellulose ethers.

37. (Original) The method of claim 36, wherein step (b)(i) comprises grinding, dicing, or shredding the mercerized cellulose pulp to form the cellulose floc.

38. (Original) The method of claim 36, wherein step (b)(ii) comprises treating the cellulose floc with an alkalating agent.

39. (Original) The method of claim 38, wherein the alkalating agent is an alkali metal hydroxide.

40. (Original) The method of claim 36, wherein step (b)(iii) comprises reacting the alkali cellulose with an etherification agent to form the cellulose ethers.

41. (Original) The method of claim 40, wherein the etherification agent comprises sodium monochloroacetate.

42. (Original) The method of claim 10, wherein step (b) comprises:

(i) alkalating the cellulose floc to form an alkali cellulose; and
(ii) etherifying the alkali cellulose to form the cellulose ethers.

43. (Original) The method of claim 1, wherein the cellulose ether is a carboxymethyl cellulose.

44. (Original) The method of claim 1, wherein the cellulose ether is a methyl cellulose.

45. (Original) The method of claim 1, wherein the cellulose ether is a nonionic ether.

46. (Original) The method of claim 1, wherein the cellulose ether is an ionic ether.

47. (Original) A carboxymethyl cellulose ether prepared by the method of claim 43.

48. (Original) A methyl cellulose ether prepared by the method of claim 44.

49. (Original) A nonionic cellulose ether prepared by the method of claim 45.

50. (Original) An ionic cellulose ether prepared by the method of claim 46.

51. (Cancelled)

52. (Cancelled)

53. (Cancelled)

54. (Cancelled)

55. (Original) A method of preparing cellulose floc comprising the steps of:

(a) obtaining mercerized and recovered cellulose pulp, and

(b) treating the mercerized pulp to form the cellulose floc,

wherein the mercerized and recovered cellulose pulp is substantially free of cellulose III.

56. (Original) The method of claim 55, wherein when the cellulose pulp is southern softwood

kraft, the mercerized and recovered cellulose pulp has at least one of the following properties:

(i) a TAPPI 230 om-89 viscosity less than 10.4 cP or greater than 11.2 cP,
(ii) a solubility in 10% sodium hydroxide as determined by ASTM D 1696-95 of greater than 2.3%,
(iii) a solubility in 18% sodium hydroxide as determined by ASTM D 1696-95 of greater than 1.3%,
(iv) not been prehydrolyzed, or
(v) not been bleached with elemental chlorine.

57. (Original) The method of claim 55, wherein the mercerized cellulose pulp has a TAPPI 230 om-89 viscosity greater than 12 cP, when the cellulose pulp is southern softwood kraft.

58. (Original) The method of claim 55, wherein the cellulose pulp is selected from the group consisting of cotton linters pulps, hardwood cellulose pulps, softwood cellulose pulps, sulfite cellulose pulps, kraft cellulose pulps, rehydrated cellulose pulps, and any combination of any of the foregoing.

59. (Original) The method of claim 55, wherein the cellulose pulp is a sulfite cellulose pulp.

60. (Original) The method of claim 55, wherein step (a) comprises:
(i) mercerizing cellulose pulp; and
(ii) washing, neutralizing, or neutralizing and washing the mercerized cellulose pulp.

61. (Original) The method of claim 55, wherein the mercerized and recovered cellulose pulp contains less than about 3.5% by weight of mercerizing agent, based upon 100% by weight of

cellulose pulp and mercerizing agent.

62. (Original) The method of claim 61, wherein the mercerized and recovered cellulose pulp contains less than about 0.3% by weight of mercerizing agent, based upon 100% total weight of cellulose pulp and mercerizing agent.

63. (Original) The method of claim 55, wherein the mercerized and recovered cellulose pulp has an alpha cellulose content less than 97% as determined by TAPPI Method T203 or ASTM D 588-42.

64. (Original) The method of claim 63, wherein the mercerized and recovered cellulose pulp has an alpha cellulose content less than 90% as determined by TAPPI Method T203 or ASTM D 588-42.

65. (Original) A cellulose floc prepared by the method of claim 55.

66. (Original) A method of preparing mercerized cellulose floc comprising the steps of:

(a) mercerizing the cellulose floc; and
(b) recovering the mercerized cellulose floc,

wherein the mercerized and recovered cellulose floc is substantially free of cellulose III.

67. (Original) A cellulose floc prepared by the method of claim 66.

68. (Original) A cotton linters pulp derived cellulose floc having an average floc length of from 0.25 to 0.50 mm and a floc tap density according to the formula:

$$\text{Floc Tap Density}_{\text{CLP Floc}} = m * (AFL)^{-0.8043}$$

wherein m ranges from 0.0755 to 0.0835 and AFL is the number average floc length of the cellulose

floc.

69. (Original) A southern softwood kraft derived cellulose floc having an average floc length of from 0.25 to 0.50 mm and a floc tap density according to the formula:

$$\text{Floc Tap Density}_{\text{SSK Floc}} = m * (AFL)^{-0.9676}$$

wherein m ranges from 0.0841 to 0.0925 and AFL is the number average floc length of the cellulose floc.

70. (Original) A northern softwood sulfite derived cellulose floc having an average floc length of from 0.25 to 0.50 mm and a floc tap density according to the formula:

$$\text{Floc Tap Density}_{\text{NSS Floc}} = m * (AFL)^{-0.7336}$$

wherein m ranges from 0.0689 to 0.0758 and AFL is the number average floc length of the cellulose floc.

71. (Original) A method of preparing cellulose ethers comprising the steps of:

(a) selecting a desired viscosity for the cellulose ethers;
(b) obtaining mercerized and recovered cellulose pulp having the appropriate viscosity for yielding cellulose ethers having the selected viscosity; and
(c) converting the mercerized and recovered cellulose pulp to the cellulose ethers, wherein the mercerized and recovered cellulose pulp is substantially free of cellulose III.

72. (Original) The method of claim 71, wherein when the cellulose ether prepared is hydroxyethyl cellulose and the cellulose pulp is southern softwood kraft, the mercerized and recovered cellulose

pulp has at least one of the following properties:

(i) a TAPPI 230 om-89 viscosity less than 10.4 cP or greater than 11.2 cP,

(ii) a solubility in 10% sodium hydroxide as determined by ASTM D 1696-95 of greater than 2.3%,

(iii) a solubility in 18% sodium hydroxide as determined by ASTM D 1696-95 of greater than 1.3%,

(iv) not been prehydrolyzed, or

(v) not been bleached with elemental chlorine.

73. (Original) The method of claim 71, wherein the mercerized and cellulose pulp has a TAPPI 230 om-89 viscosity greater than 12 cP.